

AMENDMENTS TO THE CLAIMS

1.-6. (canceled).

7. (New) An implant element for incorporation in bone tissue comprising a surface in contact with the bone tissue, wherein the surface comprises a machined titanium surface that is electrochemically anodized to provide a titanium oxide coating from 10 nm to 180 nm as measured by Auger electron spectroscopy.

8. (New) The implant element of claim 7 wherein the machined titanium surface includes machined grooves with a width of 1 to 10 microns.

9. (New) The implant element of claim 7 wherein the machined titanium surface includes a R_{rms} of about 41 nm.

10. (New) The implant element of claim 7 wherein the titanium coating includes at least 34 atomic percent carbon as measured by Auger electron spectroscopy.

11. (New) The implant element of claim 8 wherein the titanium coating is best described as an amorphous, non-crystalline oxide.

12. (New) A method of making a titanium element for incorporation in bone tissue comprising providing a machined titanium substrate with machined grooves with a width of 1 to 10 microns, and electrochemically anodizing the titanium substrate to provide a titanium oxide surface with a titanium oxide coating from 10 nm to 180 nm as measured by Auger electron spectroscopy.

13. (New) The method of claim 12 wherein the electrochemical anodization is conducted in acetic acid.

14. (New) The method of claim 12 wherein the substrate is ultrasonically cleaned in a mixture of organic solvents prior to electrochemically anodizing the titanium substrate.

15. (New) The method of claim 14 wherein the electrochemically anodized substrate is ultrasonically cleaned in the mixture of organic solvents.